1. Network interference apparatus for connecting a source and a destination in an Ethernet network using unshielded twisted pair cables, the apparatus comprising:

(a) an overvoltage protection module for connecting the apparatus to the source and for providing overvoltage protection for the unshielded twisted pairs of wires, the overvoltage protection module comprising:

(1) first and second pairs of receive electrical connections and a first overvoltage protection circuit connected in series between the first and second pairs of receive connections, the first pair of receive connections for being connected to a first unshielded twisted pair of wires carrying high speed digital signals from the source and the second pair of receive connections for being connected to an interconnection module,

(2) first and second pairs of transmit electrical connections and a second overvoltage protection circuit connected in series between the first and second pairs of transmit connections, the first pair of transmit connections for being connected to a second unshielded twisted pair of wires for carrying high speed digital signals to the source and the second pair of transmit connections for being connected to the interconnection module; and

(b) an interconnection module for connecting the apparatus to the destination, the interconnection module comprising

(1) third and fourth pairs of receive electrical connections, the third pair of receive connections for being connected to the second pair of receive connections on the overvoltage protection module and the fourth pair of receive connections for being connected to a third unshielded twisted pair of wires for carrying high speed digital signals to the destination, and

(2) third and fourth pairs of transmit electrical connections, the third pair of transmit connections for being connected to the second pair of transmit connections on the overvoltage protection module and the fourth pair of transmit connections for being connected to a fourth unshielded twisted pair of wires carrying high speed digital signals from the destination.

2. The apparatus of claim 1 wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise insulation displacement contacts.

3. The apparatus of claim 1 wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise contacts in an RJ45 plug.

4. The apparatus of claim 1 wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise contacts in an RJ45 jack.

5. The apparatus of claim 1 wherein at least two pair of receive electrical connections and at least two pair of transmit electrical connections comprise insulation displacement contacts.

6. The apparatus of claim 1 wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise contacts in an RJ45 plug and at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise contacts in an RJ45 jack.

7. The apparatus of claim 1 wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise insulation displacement contacts and wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise contacts in an RJ45 plug.

8. The apparatus of claim 1 wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise insulation displacement contacts and wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise contacts in an RJ45 socket.

9. The apparatus of any of claims 1 through 8 wherein both the first overvoltage protection circuit and the second overvoltage protection circuit comprises a gas discharge tube and a diode bridge with an avalanche diode connected across the diode bridge.

10. The apparatus of claim 9 wherein each overvoltage protection circuit includes a pair of positive temperature coefficient resistors (PTCRs) for providing overcurrent protection, the first pair of PTCRs being connected in series between the first and second pairs of receive electrical connections and the second pair of PTCRs being connected in series between the first and second pair of transmit electrical connections.

11. The apparatus of any of claims 1, 4, 5 or 8 wherein the interconnection module comprises a cable ready RJ45 jack.

12. The apparatus of any of claims 1, 2, 3, 4, 6, 7 or 8 wherein the interconnection module comprises back-to-back RJ45 jacks.

13. The apparatus of any of claims 1 through 8 wherein the interconnection module comprises a customer bridge module wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise insulation displacement contacts and wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise contacts in an RJ45 plug.

14. The apparatus of any of claims 1, 2 or 5 wherein all of the receive electrical connections and all of the transmit electrical connections on the overvoltage protection module comprise insulation displacement contacts.

15. The apparatus of any of claims 1, 2, 3 or 7 wherein half of the receive electrical connections and half of the transmit electrical connections on the overvoltage protection module comprise insulation displacement contacts and half of the receive electrical connections and half of the transmit electrical connections on the overvoltage protection module comprise contacts in an RJ45 plug.

16. The apparatus of any of claims 1, 2, 4 or 8 wherein half of the receive electrical connections and half of the transmit electrical connections on the overvoltage protection module comprise insulation displacement contacts and half of the receive electrical connections and half of the transmit electrical connections on the overvoltage protection module comprise contacts in an RJ45 socket.

17. The apparatus of any of claims 1 through 4 and 6 through 8 wherein the interconnection module comprises a metallic structure having a generally horizontal base portion, a generally vertical middle portion with an aperture therein for receiving an electrical connector and a generally horizontal top portion, the structure having a Keptel footprint.

18. The apparatus of any of claims 1 through 8 wherein the overvoltage protection module comprises a rocker arm type wire termination device comprising:

(a) a rocker arm with a pivot for mounting the rocker arm to the overvoltage protection module,

(b) first and second openings in the rocker arm adapted to receive first and second insulated wires, respectively; and

(c) first and second cavities in the rocker arm adapted to receive first and second insulation displacement contacts when the rocker arm is rotated about its pivot point to force the first and second wires into engagement with the first and second insulation displacement contacts.

19. The apparatus of claim 18 wherein the wire termination device further comprises:

(a) third and fourth openings in the rocker arm adapted to receive third and fourth insulated wires, respectively; and

(b) third and fourth cavities in the rocker arm adapted to receive third and fourth insulation displacement contacts when the rocker arm is rotated about its pivot point to force the third and fourth wires into the engagement with the third and fourth insulation displacement contacts.

20. Network interface apparatus for connecting a source and a destination in an Ethernet network using unshielded twisted pair cables, the apparatus comprising:

(a) an enclosure having a base and at least one cover;

(b) an overvoltage protection module mounted in the enclosure for connecting the apparatus to the source and for providing overvoltage protection for the unshielded twisted pairs of wires, the overvoltage protection module comprising:

(1) first and second pairs of receive electrical connections and a first overvoltage protection circuit connected in series between the first and second pairs of receive connections, the first pair of receive connections for being connected to a first unshielded twisted pair of wires carrying high speed digital signals from the source and the second pair of receive connections for being connected to an interconnection module,

(2) first and second pairs of transmit electrical connections and a second overvoltage protection circuit connected in series between the first and second pairs of transmit connections, the first

pair of transmit connections for being connected to a second unshielded twisted pair of wires for carrying high speed digital signals to the source and the second pair of transmit connections for being connected to the interconnection module; and

(c) an interconnection module mounted in the enclosure for connecting the apparatus to the destination, the interconnection module comprising

(1) third and fourth pairs of receive electrical connections, the third pair of receive connections for being connected to the second pair of receive connections on the overvoltage protection module and the fourth pair of receive connections for being connected to a third unshielded twisted pair of wires for carrying high speed digital signals to the destination, and

(2) third and fourth pairs of transmit electrical connections, the third pair of transmit connections for being connected to the second pair of transmit connections on the overvoltage protection module and the fourth pair of transmit connections for being connected to a fourth unshielded twisted pair of wires carrying high speed digital signals from the destination.

21. The apparatus of claim 20 wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise insulation displacement contacts.

22. The apparatus of claim 20 wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise contacts in an RJ45 plug.

23. The apparatus of claim 20 wherein at least one pair of receive electrical connections and at least one pair of transmit electrical connections comprise contacts in an RJ45 jack.

24. The apparatus of claim 20 wherein both the first overvoltage protection circuit and the second overvoltage protection circuit comprises a gas discharge tube and a diode bridge with an avalanche diode connected across the diode bridge.

25. The apparatus of claim 24 wherein each overvoltage protection circuit includes a pair of positive temperature coefficient resistors (PTCRs) for providing overcurrent protection, the first pair of PTCRs being connected in series between the first and second pairs of receive electrical connections and the second pair of PTCRs being connected in series between the first and second pairs of transmit electrical connections.

26. The apparatus of claim 20 wherein the inter-connection module comprises a cable ready RJ45 jack.



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27. The apparatus of claim 20 wherein half of the receive electrical connections and half of the transmit electrical connections on the overvoltage protection module comprise insulation displacement contacts and half of the receive electrical connections and half of the transmit electrical connections on the overvoltage protection module comprise contacts in an RJ45 socket.

28. The apparatus of claim 20 wherein the interconnection module comprises a metallic structure having a generally horizontal base portion, a generally vertical middle portion with an aperture therein for receiving an electrical connector and a generally horizontal top portion, the structure having a Keptel footprint.

29. The apparatus of any of claims 20 through 28 further comprising telephone overvoltage protection apparatus mounted in the enclosure for being connected to telephone voice lines for protecting the voice lines from overvoltage conditions.

30. The apparatus of any of claims 20 through 28 further comprising a subscriber bridge module mounted in the enclosure for connecting telephone company and subscriber voice lines.

31. The apparatus of claim 30 wherein the subscriber bridge module comprises a socket having an electrical switch, the switch having two sets of first, second and third contacts, the first contacts of both sets for being connected to the telephone company line, the second contacts of both sets for being

connected to the subscriber line, the first and second contacts of each set being normally connected in the absence of a plug in the socket, thereby connecting the telephone company and subscriber lines, the first contacts of both sets being disconnected from the second contacts of both sets and being connected to the third contacts of both sets when a plug is inserted in the socket, thereby disconnecting the telephone company line from the subscriber line and connecting the telephone company line to the third contacts of both sets which in turn connect with contacts in the plug and provide a demarcation point between the telephone company and subscriber lines, the current carrying capacity of the first and second contacts of both sets being greater than the current carrying capacity of the third contacts of both sets.

32. The apparatus of any of claims 20 through 28 further comprising:

(a) telephone overvoltage protection apparatus mounted in the enclosure for being connected to telephone voice lines for protecting the voice lines from overvoltage conditions; and

(b) a subscriber bridge module mounted in the enclosure for connecting the telephone company and subscriber lines.

33. The apparatus of claim 32 wherein the subscriber bridge module comprises a socket having an electrical switch, the switch having two sets of first, second and third contacts, the first contacts of both sets for being connected to the telephone company line, the second contacts of both sets for being connected to the subscriber line, the first and second contacts of each set being normally connected in the absence of a plug in the socket, thereby connecting the telephone company and subscriber lines, the first contacts of both sets being disconnected from the second contacts of both sets and being connected to the third contacts of both sets when a plug is inserted in the socket, thereby disconnecting the telephone company line from the subscriber line and connecting the telephone company line to the third contacts of both sets which in turn connect with contacts in the plug and provide a demarcation point between the telephone company and subscriber lines, the current carrying capacity of the first and second contacts of both sets being greater than the current carrying capacity of the third contacts of both sets.

34. The apparatus of any of claims 20 through 28 further comprising a coaxial connector mounted in the enclosure for interconnecting coaxial cables.

35. The apparatus of claim 34 further comprising an in-line coaxial surge arrestor comprising:

(a) a hollow conductive housing;

(b) insulating ends adapted to seal the housing;

(c) an inert gas sealed in the housing;

(d) a conductor extending through the housing, the conductor having a longitudinal axis oriented in a direction parallel to the direction of signal transmission; and

(e) the diameter of the conductor being varied along at least a portion of the length of the conductor within the housing for matching the impedance of the surge arrestor to that of the coaxial cables.

36. The apparatus of any of claims 20 through 28 further comprising:

(a) telephone overvoltage protection apparatus mounted in the enclosure for being connected to telephone voice lines for protecting the voice lines from overvoltage conditions;

(b) a subscriber bridge module mounted in the enclosure for connecting the telephone company and subscriber voice lines; and

(c) a coaxial connector mounted in the enclosure for interconnecting coaxial cables.

37. The apparatus of claim 36 wherein the subscriber bridge module comprises a socket having an electrical switch, the switch having two sets of first, second and third contacts, the first contacts of both sets for being connected to the telephone company line, the second contacts of both sets for being connected to the subscriber line, the first and second contacts of each set being normally connected in the absence of a plug in the socket, thereby connecting the telephone company and subscriber lines, the first contacts of both sets being disconnected from the second contacts of both sets and being connected to the third contacts of both sets when a plug is inserted in the socket, thereby disconnecting the telephone company line from the subscriber line and connecting the telephone company line to the third contacts of both sets which in turn connect with contacts in the plug and provide a demarcation point between the telephone company and subscriber lines, the current carrying capacity of the first and second contacts of both sets being greater than the current carrying capacity of the third contacts of both sets.

38. The apparatus of claim 36 further comprising an in-line coaxial surge arrestor comprising:

(a) a hollow conductive housing;

(b) insulating ends adapted to seal the housing;

(c) an inert gas sealed in the housing;

(d) a conductor extending through the housing, the conductor having a longitudinal axis oriented in a direction parallel to the direction of signal transmission; and

(e) the diameter of the conductor being varied along at least a portion of the length of the conductor within the housing for matching the impedance of the surge arrestor to that of the coaxial cables.